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Animal Spirits Revisited

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Abstract

The term ‘animal spirits’ has returned to academic and public discourse in a way which departs significantly from the original use of the term by Keynes. The new behavioural economics literature uses the term to refer to a range of behaviour which falls outside what is normally understood as rational. This treatment follows from the mainstream dichotomisation between rationality and irrationality. However, Keynes explained that, given fundamental uncertainty, rationality alone was insufficient to justify action. Animal spirits was the name he gave to the (psychological) urge to action which explained decisions being taken in spite of uncertainty; animal spirits for him were neither rational nor irrational. Nor are they beyond analysis. We explore how the nature and role of animal spirits can vary according to context (as between different sectors, types of firm and within firms). This analysis indicates ways in which policy can promote structural change to strengthen animal spirits in the long term as well as offset short-term weakening in animal spirits.

KEYWORDS: animal spirits, rationality, Keynes

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Introduction

The concept of animal spirits has been given renewed attention recently, notably by Akerlof and Shiller (2009), after decades of relative absence from the economics literature. It is a phrase which has also been used in non-academic discussions about behaviour leading up to the current financial crisis, and behaviour in the wake of the crisis. The concept has a long history in physiology, going back to the ancient Greeks, within discussions about the relationships between mind, body and world.¹ Such discussions are also now current in the fields of philosophy, psychology and neuroscience, with echoes too in the neuroeconomics literature. Since animal spirits is thus related to important currents in economics, we aim to consider it here in relation to economics and economic policy.

‘Animal spirits’ is a potent expression which, like most potent expressions, eludes simple definition. This is a virtue insofar as it fosters communication even where there are different shades of meaning (Davis 1999). But it impedes communication if fundamental differences in meaning are not recognised. In what follows we aim to show how different methodological frameworks produce such differences in meaning. Since we argue that animal spirits is a concept whose policy significance depends on its meaning, it is important to explore these differences.

By the 1980s mainstream macroeconomic theory had virtually eliminated any reference to the concept of animal spirits because of its classification as irrationality. In 1985 we published an analysis of animal spirits as the concept had been used by Keynes in the *General Theory*, and referring back to the *Treatise on Probability* which laid the philosophical foundations for Keynes’s use of the concept. There we argued that animal spirits were a critical element of a framework for decision making under uncertainty which was rational in a broader sense, an argument by which we continue to stand. The purpose in revisiting the concept here is first, given the revival of interest in the concept, to review the differences in meaning attached to animal spirits in the modern mainstream literature. We then continue with the meaning particular to a Keynesian framework, which involves animal spirits as part of a process of broadly rational decision-making, an approach adopted most recently by Frydman and Goldberg (2011) in their analysis of behaviour in financial markets.

We then attempt to take forward the use of the animal spirits concept, building on our 1985 analysis and drawing on the work of others who have built further on Keynes’s analysis. This work helps us to understand animal spirits in

¹ See Matthews (1984), Koppl (1991), Moggridge (1992) and Barends (2011) for discussions of the origins of the expression.

terms of current discussions of the relations between cognition and sentiment. Our particular contribution then is to develop further the idea of animal spirits as something which varies according to context, both over time and between different groups according to their different experience. This is to understand animal spirits not as mere caprice but rather as something embedded in decision making, varying according to context: different groupings in the economy, different institutional arrangements and different conjunctures. While animal spirits perform a central and enduring role within a capitalist system, there is scope for animal spirits to vary with economic structure and with economic and political ‘atmosphere’. By showing that animal spirits can be part of an analysis of behaviour, we show that policy can fruitfully take analysis of animal spirits on board.

The policy relevance of analysis of animal spirits, in addressing current structure and atmosphere, depends on the extent to which such analysis is feasible. Much depends on whether animal spirits can only be thought of as autonomous (and possibly random), so that we can only analyse their consequences; there is no basis for designing policy to modify them. If instead there is scope for developing an analysis of animal spirits themselves and the way in which they fit into the determination of behaviour, then there is scope for government to address their role in their policy-making in an active, rather than reactive, way. While there is scope for extending the analysis to household consumption (particularly discretionary consumption and consumption on consumer durables), we focus on the scope for extending the analysis from the real production sector to the financial sector.

Animal Spirits: Different Meanings in Modern Use

The term ‘animal spirits’ was recently drawn to wide attention in economics by the publication in 2009 of George Akerlof and Robert Shiller’s book of that title, the first economics book solely devoted to the concept. The context in which they approached the concept was the new behavioural economics, which uses psychological theory and neuroscience to help economists understand actual behaviour observed in experimental situations.² In particular the concern is to understand and predict behaviour which appears to challenge the predictions of models built on the axioms of rational individual behaviour.

However, their analysis retains the language of that deductive axiomatic framework, such that they classify what is being studied as ‘noneconomic motives and irrational behaviors’ (Akerlof and Shiller 2009: x). While they don’t pursue

² The term ‘new behavioural economics’ is used here to distinguish it from the ‘old behavioural economics’ a distinction explained by Sent (2004).

the meaning of this classification itself, it seems that the distinction between rationality and irrationality (as well as between economic and noneconomic) is embedded in the axiomatic framework which they are challenging.³ Indeed the rationality/irrationality dual had provided the traditional distinction between subject matter of economics and psychology respectively, such that irrationality was not seen as something economists might discuss. But psychology has moved on in developing theories of emotion for example, while neuroscience now addresses the interactions between physiology, cognition and emotion. But, while new behavioural economics is being drawn into this territory by the Akerlof and Shiller volume, we shall see below the significance of retaining the traditional rationality/irrationality distinction.

Mainstream economics has the potential to develop significantly with Akerlof and Shiller, exploring beyond traditional boundaries. They demonstrate the importance of understanding the economic role of each of the forms of animal spirits which they identify; the subtitle of the volume is after all *How Human Psychology Drives the Economy, and Why it Matters for Global Capitalism*. While they refer to Keynes's (1936) use of the term 'animal spirits', Akerlof and Shiller go way beyond his application of the concept to the entrepreneur's motivation to invest in real capital. Instead they apply animal spirits to knowledge more widely: to confidence, to money illusion and to the way in which knowledge is constructed within stories. But they also apply it to 'noneconomic' ethical preferences with respect to fairness on the one hand and corruption and anti-social behaviour on the other. Since none of this accords with the standard rationality framework it is all classed as irrational. The analysis of irrationality is taken forward by differentiating between these various aspects. Further, although animal spirits for Akerlof and Shiller are 'restless ... thought patterns' (pages 1, 4) which promote instability, the overall discussion treats them as something other than a stochastic phenomenon. However Nuti (2009) notes that the emphasis is on the effects of each aspect of 'irrationality' rather than an explanation of its source.

This identification of animal spirits with 'black box' irrationality has been a central feature of the way in which the concept has been used in the mainstream literature since Keynes. In the neo-classical synthesis period, animal spirits lay behind the critical exogeneity of the investment demand function, although the term itself fell into disuse. In turn, with the advent of New Classical economics, the concept of irrationality itself fell into disuse. But then it was revived by New Keynesian attempts to develop an alternative to real business cycle theory. A large literature has now developed which explains economic fluctuations in terms of animal spirits. These were understood initially as (irrational) expectations which were self-fulfilling (see Azariadis 1981, Shleifer 1986 and Howitt and McAfee

³ Indeed they refer throughout to 'economists' as those who employ this framework (see e.g. page 12), without reference to other approaches to economics.

1992). The meaning of animal spirits was generalised as a random shock to 'beliefs', which could explain economic fluctuations (Farmer 2010). But, since it had been argued that, within the theory, animal spirits could in fact be substituted by sunspots, it was clear that the essence of the argument was that any stochastic exogenous variable could generate fluctuations (Woodford 1991, Farmer and Guo 1994).⁴ By implication, since this variable was unexplained, and if irrational behaviour were inexplicable, there was little scope for policy to address it, other than dealing with its consequences.

In this literature, as in Akerlof and Shiller, Keynes's animal spirits are a starting-point.⁵ Farmer for example reflects the spirit of Keynes's theory of knowledge by his use of the concept of belief. Further, reference is sometimes also made to Keynes's (1936: 156) quite different beauty contest metaphor to explain self-fulfilling expectations in financial markets. Since these expectations are assumed to arise randomly, they take the same form as animal spirits, which are also assumed to be random. The end result in this literature is therefore much more constrained than in the Akerlof and Shiller volume because of the insistence on formalisation in terms of stochastic models within the rationality framework. While Akerlof and Shiller concentrate on the territory outside that framework, the New Keynesian literature ends up, quite logically, giving the name of animal spirits to a stochastic exogenous variable whose source is beyond exploration. What is on offer therefore is either a very broad understanding of animal spirits which potentially refers to anything outside the formal rationality framework or a narrow understanding of it in terms of its formal specification as a stochastic variable.

Ultimately it is puzzling that Akerlof and Shiller should adopt the language of the deductivist framework, creating an apparent bifurcation between that framework and their own, quite different, framework as if what they have to say falls outside economics. While they appear to be challenging the mainstream account, they do not challenge the core concept of rationality itself. A critique of this mainstream framework is at the heart of Frydman and Goldberg's (2011) argument about the inadequacies of theory based on the rationality principle, with its presumption of certainty or certainty-equivalence. They point out that this approach to economic theory can only depict markets as being mechanical, where 'nothing new ever happens'. Yet capitalist economies are essentially creative and on that account prone to quite normal fluctuations and to the general uncertainty of knowledge; there is no good reason to expect these fluctuations to arise randomly. Bhidé (2011) makes a closely-related argument with respect to

⁴ See Davidson's (2007: 111-2) critique of sunspot theory in rational expectations models.

⁵ Herbert Simon's bounded rationality is the starting-point for the literature which explains animal spirits as biased belief due to cognitive limitations (see e.g. de Grauwe 2010, who posits bias as unexplained 'optimism' or 'pessimism').

mainstream finance theory and the need for judgement given the shortcomings of the mainstream understanding of rationality.

Akerlof and Shiller's choice of terminology may have been designed to communicate to the mainstream that their analysis lies outside the strict rationality framework. But by classifying their area of study as irrationality they perpetuate that framework, whereas different frameworks would allow for different conceptualisations. Indeed there is a range of frameworks outside the mainstream which understand rationality in a different way from the mainstream.⁶ In order to explore further the meaning of animal spirits within one such alternative framework, we go back to Keynes again and consider how the Post Keynesian literature has built on his use of the concept of animal spirits within a theory of rational belief.

A Post Keynesian View

In order to understand the modern Post Keynesian account of animal spirits it is useful to start by considering what Keynes seems to have meant by the term. He uses the term only three times, in pages 161-2 of chapter 12 of *The General Theory* which deals with the decision by entrepreneurs to invest in real capital:

Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits — of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. ... Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die;— though fears of loss may have a basis no more reasonable than hopes of profit had before. ... But individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy man puts aside the expectation of death.

Animal spirits therefore refer to an innate capacity or instinct or disposition of the entrepreneurs who characterised 'old-fashioned capitalism'. These are 'individuals of sanguine temperament and constructive impulses who embarked

⁶ These alternative frameworks also tend to understand economics as a moral science, where values are necessarily embedded in any framework, including the mainstream framework. Discussions of fairness and anti-social behaviour therefore, far from being noneconomic, make sense within these alternative approaches to economics. But that is not our primary concern here.

on business as a way of life' and who take 'satisfaction (profit apart) in constructing a factory, a railway, a mine or a farm' (Keynes 1936: 150).⁷ He also makes explicit in these passages that, without animal spirits, investment will be inadequate and the economy will settle into a slump. As the key element in the investment decision, therefore, animal spirits were central to Keynes's theory of effective demand and his identification of an underemployment equilibrium as the norm.⁸

The reason that the investment decision relies on animal spirits is that rational quantitative calculation alone cannot justify action under uncertainty. This argument, building on Keynes's *Treatise on Probability*, provides the basis for the broader interpretation of animal spirits in the Post Keynesian literature, one captured by Kregel (1987) in the term 'rational spirits'.⁹ Keynes understood the economy as an open, organic system, where creativity and evolutionary change meant that the past was only a limited guide to the future. Creative behaviour and social structures change in ways which cannot be predicted on the basis of quantified probabilities. Far from being predictable, the future has yet to be created (Shackle 1972). In such an environment, which is in general characterised by uncertainty, reason and evidence can only provide a partial justification for decisions. Institutions and social practices evolve to provide a more stable environment for decision-making. But reason and evidence need to be supplemented by other sources of (uncertain) knowledge: conventional knowledge, the knowledge of experts and reliance on past experience (Keynes 1937). Combining these disparate sources of knowledge requires the exercise of judgment.¹⁰ Indeed, in Keynes's framework behaviour which ignores the limitations on calculative rationality would itself be irrational (Kregel 1987). But, given that judgement has recourse to more or less evidence and reason in different circumstances, the mainstream duality of rationality/irrationality no longer applies (or else most judgement must be classed as irrational).

Both Keynes (1921) and Knight (1921) drew a strong distinction between expectations themselves and the degree of confidence with which they are held. Confidence depends partly on weight of argument. Weight is greater the larger the amount of relevant knowledge relative to relevant ignorance. But more evidence and greater weight may be associated with an outcome being more or less likely. Further, more evidence may be associated with reduced weight if it reveals new

⁷ The idea was current in the 1930s when Keynes was writing that entrepreneurs displayed particular characteristics (see Matthews 1984).

⁸ Pace Barens (2011), who sees animal spirits as only relevant to short-run fluctuations rather than underemployment equilibrium.

⁹ Keynes's argument that action requires an emotional trigger has been developed in neuroscience, notably by Bechara and Damasio (2005); see further Dow (2011).

¹⁰ See Bhidé (2011) for a discussion of the central role for judgement where knowledge is uncertain, applied to theorising as well as to financial market analysis.

realms of ignorance. But the degree to which ignorance is recognised is ultimately a matter of psychology (Dow 1995); indeed Keynes (1936: 149) refers to the importance of ‘business psychology’ for the state of confidence. Since weight itself is indeterminate, given that it may shift with changing judgements as to new evidence and new ideas about relevance, confidence is also indeterminate and subject to shifts. But since decisions on investment in particular are dependent on such judgements (far less animal spirits), macroeconomic outcomes are indeterminate. This is the open, organic world which makes quantitative probabilities an inappropriate basis for knowledge (Kregel 1987).

This was a general theory of knowledge, as Keynes (1936: 162-3) indicates, following the passages cited above on animal spirits:

[H]uman decisions affecting the future, whether personal or political or economic, cannot depend on strict mathematical expectation, since the basis for making such calculations does not exist; ... it is our innate urge to activity which makes the wheels go round, our rational selves choosing between the alternatives as best we are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance.

Since Keynes’s theory of knowledge is general (in building on the generality of uncertainty), the role of animal spirits is potentially also general, where conventional judgement and routine behaviour alone are not sufficient to promote action, given the uncertainty surrounding reason and evidence.¹¹ All activity potentially requires some element of animal spirits.¹² But Keynes’s analysis indicates that the relative importance of animal spirits as an innate disposition is greater in some circumstances than others, which is why he focused the discussion on entrepreneurial action. For example he argued that conventional judgement was relatively more important than animal spirits in the financial sector.

Keynes’s use of the concept of animal spirits therefore goes beyond a relatively enduring characteristic of entrepreneurs alone and incorporates his notion that ‘spontaneous optimism’ may ‘falter’. Therefore, in addition to animal spirits being an innate characteristic whose incidence may change over the long term with changes in industrial organisation, they are also a contributor to

¹¹ Coddington (1982) correctly identified the general rationale for the role of animal spirits as applying potentially to all decision making. But his conclusion was that, if all decision-making were indeterminate as a result of exogenous influences on expectations, then macroeconomics would collapse into nihilism.

¹² Getting up in the morning in spite of our inability to quantify probabilistic forecasts for the day is something normally governed by routine as much as reason and experience; but sometimes our animal spirits may fail, leading us to take ‘duvet days’.

decision-making which may vary in the short term – they may be ‘dimmed’. (While uncertainty is greatest for long-term expectations, it also applies to short-term expectations; both can vary in the short run.) Thus an increase in uncertainty because of a reduction in confidence in expectations discourages active decisions.¹³ Just as the degree of confidence can change by degrees, animal spirits can also be understood to change by degrees. Thus, while the application to the investment decision treated action and inaction as binary concepts (as in Shackle’s ‘crucial experiments’), the broader application of animal spirits would allow for degrees of action, ranging from a preference to remain liquid, through following conventional judgement in varying degrees, to pure creative innovation.

Dequech (1999) shows how animal spirits influence both expectations and confidence, demonstrating that animal spirits are interrelated with cognition. He offers an overarching definition of the meaning of animal spirits as ‘the optimistic disposition to face uncertainty’ (Dequech 1999: 420, n.12). As far as expectations are concerned, strong animal spirits take the form of spontaneous optimism, i.e. optimism which does not logically follow from reason and evidence. As far as the confidence in expectations is concerned, strong animal spirits take two forms: a low perception of uncertainty on the one hand and a high willingness to act in spite of whatever uncertainty is perceived on the other hand.¹⁴ But they are also subject to variation depending on circumstances. This implies that we may explore the structural factors which give more rein to entrepreneurship and thus to animal spirits separately from the circumstances which tend to change the strength of animal spirits.

Dequech includes creativity as a variable which enters separately into expectations formation and indeed as a factor in making the economic environment so uncertain. Then animal spirits determine how far innovative action actually occurs. Terzi (1999: 16-7) draws a parallel between animal spirits and Schumpeter’s urge to innovate.¹⁵ But these urges can arguably be understood as goals, while animal spirits refer more to the epistemology applied to the motivation: the degree of optimism and the attitude to uncertainty, the urge to action in spite of uncertainty. This relates to discussion about process rather than

¹³ The obverse is an increase in liquidity preference (Kregel 1987). In the Post Keynesian literature liquidity preference is a concept which has also been generalised to apply to all decisions (to spend, to invest, to seek employment, etc), not just the choice between money and bonds (Dow and Dow 1989).

¹⁴ See further Dequech (2005); see Dow (1995) on uncertainty perception and weight of argument.

¹⁵ Schumpeter, like Keynes, depicted entrepreneurs as pro-active in innovation, going beyond rationality in taking steps for which the outcome was uncertain (Hagedoorn 1996). However Loasby (1999: ch. 8) argues that Schumpeter nevertheless identified entrepreneurs as being relatively skilled in making predictions under uncertainty; they suffer from lower levels of uncertainty than others. This differs from Keynes’s focus on optimism and willingness both to recognise and to face up to uncertainty.

ends, about activity for its own sake, about channelling energies (Matthews 1984) and about Nietzschean ‘becoming’ and ‘overcoming’.¹⁶ Thus motivations to innovate may refer to more fundamental motivations, such as personal satisfaction or financial accumulation, and/or to a drive which is not goal-related, such as ‘becoming’. As Bhidé (2011: 5) puts it: ‘Unfathomable emotions and subconscious drives, not just the pursuit of wealth (or the possibility of pleasurable consumption that wealth provides), play a crucial role in determining whether someone makes a “leap in the dark”’.

Since the literature on innovation places such importance on epistemological issues arising from the inherent uncertainty surrounding the innovation process, it seems that there is significant scope for considering innovation as a particular action to which animal spirits are relevant. Indeed there have been increasing attempts to combine Schumpeterian theory and Keynesian theory (see for example Bertocco 2007) which suggest that there may be some common ground to be explored. Most importantly for our purposes, Schumpeter’s PhD student Minsky applied Schumpeterian theory of innovation to the financial sector in his Keynesian theory of financial instability in a way which we will explore below as we consider animal spirits in that sector.

We have already noted that animal spirits may be more evident and more important in some circumstances than others: where there is particular uncertainty and where action goes beyond routine and convention. In considering animal spirits for policy we therefore need to consider where the important incidence of animal spirits is in the modern economy. Keynes (1921) analysed expectations (or in his terms probability) as being objective in the sense of drawing on reason and experience; faced with the same experience, different analysts or decision makers applying reason would reach the same conclusions. But different analysts and decision makers do not build on the same experience; their contexts are different such that even what are often regarded as ‘facts’ may be understood differently and in particular uncertainty may be perceived differently. But in any case, once we take account of the role of conventional judgement and animal spirits being combined with reason and experience, the context-specificity and individual particularity of expectations becomes apparent (Shackle 1974; Kregel 1987). As Carabelli (1988: 237) puts it: ‘What he [Keynes] appeared to think was that different types of rationality, or rules of reasonableness, existed, according to the different cognitives [sic] domains, which characterised the different economic groups’. Since animal spirits enter into the perception of uncertainty surrounding knowledge, they affect the process of judgement (Davis 2003). Keynes (1936: 162) indicated with respect to animal spirits that ‘we should not conclude ... that everything depends on waves of irrational psychology’.

¹⁶ Robb (2009) explains Nietzsche’s thought, relative to rationalist logic applied to given ends in the absence of uncertainty (see also Bhidé 2011: 5).

While animal spirits play a general part in addressing the uncertainty surrounding our knowledge, there is scope for disaggregating their nature and role according to different functional groupings in the economy, as well as to different times and places (see further Gerrard 2003). This applies to spontaneous optimism and the willingness to ignore and perceive uncertainty as an enduring characteristic on the one hand and as something which varies conjuncturally on the other. Animal spirits are therefore endogenous to structural change and also to changing conjuncture. But they are also related to the (uncertain) knowledge on which decisions are based, in that the confidence with which expectations are held depends on the propensity to recognise uncertainty. Just as cognition and emotion are interconnected, so are animal spirits and the other inputs to decision-making. In particular, conventions and routines are a way of avoiding uncertainty in a passive way, while the exercise of animal spirits is avoidance in an active way. In what follows we will therefore also explore the interactions between animal spirits and other contributors to decision-making.

We begin by focusing on the non-financial business sector as the primary arena for animal spirits. But then we see that animal spirits feature in other sectors, and indeed can contribute to our understanding of behaviour in the financial sector in the run-up to the current crisis. We will consider animal spirits in terms of structural factors which change only slowly, but also animal spirits whose variability in times of high uncertainty plays an important part in short-term developments.

Extending Animal Spirits within a Post Keynesian Framework

Business sector – non-financial

The role of entrepreneurship and thus the scope for animal spirits has changed with structural change in the production sector; Keynes noted that the relative decline of owner-managership of companies meant a reduced incidence of the business way of life (Gerrard 1994: 16). But he focused his analysis of capital investment on entrepreneurs as individual owner-managers and on the increasing role of financial markets in overriding entrepreneurial behaviour and thus animal spirits (Keynes 1936: ch. 12). This followed from the increasing dependence of companies on finance by raising share capital, as companies changed from owner-managership to being publicly-quoted companies. The valuations of investment plans by financial markets therefore put constraints on entrepreneurial activity even by large companies. Keynes contrasted the role of the animal spirits of entrepreneurs taking the long view with the strongly socio-conventional nature of market behaviour taking the short view where uncertainty had less scope.

Individual owner-managership continues to be relevant to small firms. Indeed the persistent evidence of high failure rates among start-ups is evidence itself of the persistence of strong animal spirits in defiance of the lack of purely rational justification for capital investment. Nevertheless the driving force for investment has increasingly become large business organisations. But Schumpeter (1943) carried the character of entrepreneurship over into routine cooperative behaviour within even the large joint-stock companies which came to dominate entrepreneurial activity in the twentieth century (see further Langlois 1996). He saw research and development (R&D) activity building on a larger evidence base than was available to small owner-managed firms, and thus apparently a reduced need for animal spirits. But others have emphasised nevertheless that uncertainty still prevails for large companies, by implication maintaining the role of animal spirits (see e.g. Loasby 1999: ch.8).

The traditional theory of enterprise, which focused on the individual entrepreneur as directing the firm, enabled a profit-maximisation modelling approach to be more readily applied. But Nelson and Winter's (1982) evolutionary approach places the role of individuals and their animal spirits within organisations, whose structure is important for outcomes. They emphasise the importance of routines in large organisations as part of an evolutionary process which influences the path of technological change. In accordance with this approach, Earl and Potts (2011) have developed an insightful line of argument focusing on the internal structure of organisations.¹⁷ They demonstrate that the conflict which Keynes had identified between the short-term calculations of financial markets and the long-term plans of entrepreneurs is now increasingly playing out within organisations in the internal relations between the accounting function and the R&D function. Where the accounting function is given precedence, the animal spirits of the R&D function are suppressed.

This emphasis on short-term valuations has acquired even greater force through the increasing practice of remuneration by stock options, skewing incentives away from innovation (Lazonick 2009). Indeed changing industrial organisation also changes the moral dimension of choice (Loasby 1976: 6). Morality is a peculiarly human aspect of 'animal' spirits. In a public company, managers have a moral responsibility to pursue the interests of shareholders and thus avoid undue risk. Yet the loss of moral sensibility in business behaviour has become a running feature of public discourse, particularly regarding the financial sector.

Where market valuations are the primary focus, there is a tendency to consider mergers and acquisitions (M&A) as an alternative to innovation as a means of enhancing stock value. This in itself requires the exercise of animal

¹⁷ This paper was particularly influential for our thinking.

spirits, given the inevitable uncertainty surrounding the long-term value of assets being acquired, but with different consequences to animal-spirits-driven innovation. For Keynes animal spirits were seen in a positive light, as underpinning investment, contrary to their negative interpretation in the mainstream literature as a source of disturbance (Koppl 1991, Barends 2011). But here we see the possibility of the negative consequences of animal spirits for capital investment if they are diverted into other activities. Takeovers can have a range of positive consequences for productivity and for aggregate demand, particularly if they are cross-border; they can generate fee income and increased employment. But both the aggregate supply and aggregate demand consequences will often be negative.¹⁸

Marchionatti (1999) extends our understanding of animal spirits in another direction by drawing on Marshallian and Schumpeterian ideas about the business environment. We have already seen that Schumpeterian analysis shows that the structure of industrial organisation (firm size, firm age, corporate governance etc.) is important for the scope and character of animal spirits, just as Marshall had focused on the importance of industrial organisation for entrepreneurship. The success of the industrial districts which Marshall advocated as a successful form of organisation was due in large part to a factor on which both Keynes and Schumpeter focussed: *the political, social and economic atmosphere*. In discussing the relevance of atmosphere for animal spirits, Marchionatti (1999: 431) identifies it with the ‘rules of the social game’, based on a shared ideology or ‘mental model’. Marshall’s industrial districts allow a productive atmosphere for innovation as a positive externality. A positive atmosphere can promote innovation by encouraging spontaneous optimism, i.e. optimism not justified by rationalist logic. It can also discourage a focus on the uncertainties of knowledge. A negative atmosphere on the other hand can discourage innovation by breeding spontaneous pessimism, increased awareness of uncertainty and increased uncertainty aversion.

There is an inherent social dimension to the atmosphere which imbues animal spirits. While much of the discussion of animal spirits treats them as an individualistic phenomenon, Dequech (1999) notes the role of social conditioning.¹⁹ Indeed one of the early references to self-fulfilling expectations on which the mainstream literature draws (see e.g. Farmer and Guo 1994) is the sociologist Merton’s (1948) introduction of the concept in terms of ‘social logic’. While the literature on entrepreneurship encourages an individualistic understanding of animal spirits, even in that context individuals draw on the social atmosphere to which Keynes refers. Thus, for example, the emotional state, and

¹⁸ See Earl (1984: 181-3) for an analysis of different types of M&A activity.

¹⁹ See also Gillies (2003) on the intersubjectivity of long-term expectations.

therefore animal spirits, within a firm may be encouraged by effective leadership (see Wallis, Dollery and Crase 2009).

The notion of ‘atmosphere’ is not only a product of structure, but it is also important for the behaviour of animal spirits in the short run, since changes in the atmosphere may discourage innovative ‘leaps in the dark’. This may result, as Keynes (1936: 162) pointed out, in a change in the political atmosphere, which may cause animal spirits to falter:

[E]conomic prosperity is excessively dependent on a political and social atmosphere which is congenial to the average business man. If the fear of a Labour Government or a New Deal depresses enterprise, this need not be the result either of a reasonable calculation or of a plot with political intent; — it is the mere consequence of upsetting the delicate balance of spontaneous optimism. In estimating the prospects of investment, we must have regard, therefore, to the nerves and hysteria and even the digestions and reactions to the weather of those upon whose spontaneous activity it largely depends.

We will pick up again on issues of industrial structure and animal spirits and of the political and social atmosphere in the discussion of policy below. But before then we turn to the consideration of animal spirits in a context where Keynes, writing in the 1930s, thought they were less relevant: the financial sector, and, in particular, banking.

Financial sector

Keynes focused his attention in discussing animal spirits on entrepreneurial investment as being the activity most concerned with acting on highly uncertain long-term expectations, while the financial sector was driven much more by routine behaviour and conventional judgement. But the financial sector, and particularly banking, has undergone major structural change since the 1930s. Indeed one of Minsky’s (1986) major contributions was to apply Schumpeterian theory of innovation to the financial sector (see Papadimitriou and Wray 2010). Thus Minsky’s financial instability hypothesis focuses on the financial innovations resulting from the forces of competition and attempts to avoid the costs of regulatory constraints — which create an increasingly fragile financial structure. These are not innovations which centrally involve capital investment and employment, but rather focus on new financial products, practices and organisational forms in companies and markets. As long as each innovation becomes widely adopted and as regulation evolves to take them into account, the impetus for further innovation remains.

Minsky's analysis is very apt for understanding the banking crisis which broke in 2007. Deregulation had opened up markets to previously-segmented financial institutions, creating possibilities for a new structure for the financial sector and new products and practices. But the introduction of capital adequacy ratios in 1988 under the Basel I system prompted banks in particular to strip assets off their balance sheets by means of securitisation and to engage in a range of non-traditional activities such as derivatives trading rather than lending, all to avoid raising capital (see Chick 1986, 2008). While banks could be said traditionally to have exercised some animal spirits when engaging in loan contracts held to their full term, the emergence of the originate-and-distribute model reduced uncertainty and thus the need for animal spirits. The increasing complexity and opacity of structured derivatives products based on originate-and-distribute credit (particularly for subprime mortgages) was a major factor in the build-up of the crisis. Another structural factor was the increasing incidence of M&A activity in banking which had followed on deregulation, as an alternative to in-house innovation.²⁰

How far did animal spirits play a part in these structural developments? Since the 1960s banks have been pro-active in competition, driving innovation within the sector. It is in the nature of innovation in a highly competitive environment that its outcome cannot be predicted in any precise way, i.e. it is subject to high uncertainty. While, as with real production, innovation may become routinised to a considerable extent, nevertheless the exercise of animal spirits is required in choosing one innovative path over another, and choosing the timing and mode of delivery of particular products. This is most clear in the case of takeovers. For example the Royal Bank of Scotland's takeover of ABN-Amro can be seen as a case of spontaneous optimism (optimism which could not be fully explained either by rational calculation or by conventional judgement) and an unwillingness to address the uncertainty surrounding this judgement, i.e. a case of strong animal spirits.

We would argue therefore that animal spirits are relevant to an analysis of structural innovation in modern banking, with many parallels to an analysis of animal spirits and innovation in the productive sector. We should also consider the financial sector more widely and in particular the kind of market sentiment which is central to a Keynesian and Minskyan account of financial markets. Market valuations draw on reason and evidence as far as possible, but they rely

²⁰ Indeed the Royal Bank of Scotland's takeover of ABN-Amro was seen as a major factor in its downfall in the crisis. M&A within the UK had been spurred on particularly by new legislation which allowed the demutualisation of building societies and savings banks, which then found it hard to compete with the large established banks. It was the innovative choice by one of these new banks, Northern Rock, to rely so extensively on interbank funding which led to its downfall.

heavily also on conventional judgement (Dow 2010). Where action in line with conventional judgement becomes routinised, there is not much of a gap to be filled by animal spirits. But some market commentators have referred to the strengthening of market sentiment before the crisis in terms of animal spirits. Market sentiment was characterised by optimism which was not justified by reason and evidence alone. Also there was little evidence of awareness of the uncertainty surrounding market valuations. Financial markets are notoriously averse to uncertainty, but little was perceived. So far financial markets seem to fit Dequech's definition of animal spirits. But since this attitude became entrenched as a conventional judgement it fits less well. Market behaviour based on overoptimistic expectations believed to be close to certain (or at least certain within a known probability distribution) became routine, not appearing to require much in the way of spontaneous urges.

Yet psychological theory applied to the financial crisis (emotional finance theory) does support the notion of subconscious urges among traders (Tuckett 2011). Indeed market sentiment as conventional judgement may be said to draw on animal spirits in the form of absorption of atmosphere, where atmosphere cannot be reduced to rationality. Keynes's concern with the political and social atmosphere as supporting 'the delicate balance of spontaneous optimism' for 'the average business man' is relevant to the delicate balance of conventional optimism in financial markets. When that balance is upset – by a freezing of the interbank market, by the failure of a large financial institution, or by the size of the public deficit – the primary effect on markets is to draw attention to uncertainty, to which markets are highly averse. On both counts (uncertainty perception and uncertainty aversion) animal spirits are dimmed. This sets in train asset sales which depress market values; falling values cause defaults in a highly-leveraged and interconnected system, and the basis for optimism (as distinct from spontaneous optimism) dies.

This discussion of animal spirits and the financial sector indicates that we should include the financial sector along with the productive sector in discussion of the policy relevance of animal spirits.

Conclusion: Animal Spirits and Policy

We have attempted here to clarify the various meanings given to animal spirits with a view to considering their policy relevance. The traditional mainstream view of animal spirits is that they are irrational and thus an unwelcome source of stochastic disturbance. Like any other stochastic disturbance, the policy implications are very limited. Accepting this distinction between rationality and irrationality, Akerlof and Shiller (2009) explore animal spirits further in terms of irrationality and non-economic motivation. In this paper we explored the Post

Keynesian understanding of animal spirits based on a broader understanding of rationality which stems from an understanding of the pervasiveness of uncertainty. We explored animal spirits as ‘the optimistic disposition to face uncertainty’ (Dequech 1999: 420, n.12) both as an enduring disposition most evident among entrepreneurs on the one hand and on the other hand as something which advances and recedes in the short run.

Because animal spirits combine with knowledge of different forms as the basis for action, and have a strong social dimension, and because innovation occurs primarily now in large organisations, animal spirits take on a different hue from the traditional individualistic view of them as ‘mere caprice’. These factors also open up the opportunity for policy to be addressed to animal spirits; this is important since animal spirits are key to innovation in the production sector as a long-run phenomenon and to emergence from recessions in the shorter term. Thus policy can be addressed to improving the institutional and cultural environment for innovation, providing government support for investment when animal spirits are weak and addressing the economic, political and social atmosphere.

While Keynes had limited his discussion of animal spirits to the production sector rather than the financial sector, here we have shown that analysis in terms of animal spirits can contribute to our understanding of the financial crisis. The evolutionary analysis of structures, products and practices carries over from the production sector to the financial sector. We saw the increasing incentives in the production sector to divert activity from capital investment to M&A as a less socially-desirable consequence of the exercise of animal spirits. In the financial sector we saw even more scope for socially-undesirable consequences of animal spirits. Since provision of a stable banking system which creates stable money is a necessary contributor to a productive economy, policy should be addressed to reformulating regulation to structure banking in such a way as to curtail the scope for the more damaging exercise of animal spirits.

We have seen that the long-term consequences of animal spirits are relevant for policy with respect to two important areas: economic growth through innovation and the maintenance of a stable financial sector which meets the needs of the production sector. There is room for government to tip the balance back towards animal spirits which promote business innovation. This is generally recognised for small and medium-sized enterprises (SMEs) which are dependent on bank finance. Provision of finance is discouraged by evidence of failure rates among new small business in particular. But traditional banking involved close relationships with borrowers such that enough information could be gathered about potential borrowers on which to base a judgement by the bank (see further Bhidé 2010). Essentially it required the bank to share the animal spirits of the borrower, but to a lesser degree given the mechanisms available for protecting the

bank's position (such as collateral requirements). The current policy to require banks to lend more to small businesses can only be justified for the banks if they change their practices back in the direction of traditional relationship banking.

For larger scale business in strategic sectors the policy issue is rather different. A case can be made for restoring the policy of identifying key sectors for support; this would apply particularly to sectors, such as the airline industry, which require such extensive long-range planning as to exceed any reasonable exercise of animal spirits. It would be impossible for the private sector not to perceive the uncertainty surrounding innovation in that sector and unreasonable then to ignore it; animal spirits could not be expected to counteract the tremendous uncertainties involved. Animal spirits are a key distinguishing feature of enterprise relative to government. But when they are lacking and government can see the social consequences of this, either the government can provide support to provide good reason for investment, or indeed public sector investment can effectively substitute for enterprise.

Equally important as attention to individual firms or sectors is the economic, political and social atmosphere as a longstanding phenomenon. Just as firms are social structures, they are embedded in society more widely. Indeed a neo-Schumpeterian national innovation system builds on the premise that innovation is a systemic process. Therefore, as Nelson has argued, policy can, and needs to, be directed also to culture and institutions at the national level (see Nelson, ed., 1993). These institutions include the financial sector, both as provider of finance and as provider of a stable means of payment, on which animal spirits depend.

Animal spirits may also vary in the short run, causing either (or both) financial market instability or unwillingness of firms to engage in capital investment. There is scope for policy to address both of these. Government pronouncements can influence the day-to-day atmosphere, changing the state of spontaneous optimism and the attitude to uncertainty. Keynes had seen interest rate policy in this light (Tily 2007: ch. 11) and there has been increasing attention recently to the importance of central bank signalling (Dow, Klaes and Montagnoli 2007). Thus the authorities can use pronouncements in an effort to stabilise financial markets, as well as to encourage capital investment.

But signalling can only be successful if it is not overwhelmingly contradicted by experience. The theory of animal spirits we have been exploring here has considered animal spirits as being integrated with a general theory of knowledge as the basis for action. They therefore need to be considered alongside reason, evidence and conventional judgement as a necessary impetus for non-routine action. Strong animal spirits can allow us to ignore uncertainty and even reason and evidence (Tuckett 2011). But it is a matter of balance. If animal spirits

are strong at a time when reason and evidence do not support them, at some point reason and evidence break through.

Animal spirits are in the subconscious, neither random nor subject to full explanation; they are neither rational nor irrational, but rather arational. Yet we have identified contributors to animal spirits, such as the economic, political and social atmosphere. This is open to analysis and potentially to management by government. Animal spirits are only a part, but an integrated part, of the foundations for action.

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